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09/382,438	08/25/1999	WILLIAM R. GARDNER	QCPA990482	5232

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Qualcomm Incorporated
Patents Department
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EXAMINER
RYMAN, DANIEL J

ART UNIT	PAPER NUMBER
2665	

DATE MAILED: 08/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/382,438	GARDNER ET AL.	
	Examiner	Art Unit	
	Daniel J. Ryman	2665	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 July 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *10-29* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *10-29* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Examiner acknowledges the filing of an RCE on 7/5/2005.

2. Applicant's arguments filed 7/5/2005 have been fully considered but they are not persuasive. On page 7-8 of the Response, Applicant asserts that Jung does not teach that the code spreading occurs in the time-domain since Jung's "'subscriber-specific signature code sequences' are applied prior to an inverse discrete Fourier transform." Examiner, respectfully, disagrees. Jung discloses that the transmitted data sequence, $d^{(k)}(t)$, is a time domain signal composed of data symbols, $d_n^{(k)}$, multiplied by chips, $c^{(k)}$, in the time domain. While Jung teaches the use of an IDFT, this IDFT is only performed during the formation of the chip sequence (col. 4, lines 31-39 and col. 9, lines 7-14: equation (12)). Specifically, Jung teaches using the process outlined in col. 10, line 14 through col. 11, line 2 to calculate the spread modulation presented in equation (12). In this process, a matrix of the IDFT (equation (16)) is used during the calculation of equation (17) (col. 10, lines 32-34) where equation (17) is used to form subscriber-specific spread sequences (col. 10, lines 47-50 and 58-60). Thus, Examiner maintains that in Jung the actual spreading of the signal using the code sequence is performed in the time-domain rather than the frequency domain. Again, other publications detail that code spreading occurs in the time-domain, including Honkasalo (USPN 6,317,413) see col. 1, lines 20-41, esp. col. 1, lines 34-37.

3. In view of the foregoing, Examiner maintains that the claims are obvious in view of the cited prior art.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 10-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over van Nee (USPN 6,175,550) in view of Jung et al. (USPN 6,307,851).

6. Regarding claim 10, van Nee discloses a method in a wireless communication system, comprising: designating a multi-carrier forward link having a plurality of forward link frequency bins (col. 1, lines 17-27; col. 1, line 38-col. 2, line 21; and col. 8, lines 20-67); and designating a reverse link having at least one reverse link frequency bin (col. 1, lines 17-27; col. 1, line 38-col. 2, line 21; and col. 8, lines 20-67), wherein the forward link frequency bins and the at least one reverse link frequency bin are designated such that bandwidth of the forward link is allocated differently from bandwidth of the reverse link (col. 1, lines 17-27; col. 1, line 38-col. 2, line 21; and col. 8, lines 20-67).

Van Nee does not expressly disclose that the forward link frequency bins and the at least one reverse link frequency bin comprise signals obtained by code spreading in the time domain. Rather van Nee discloses that the signals are transmitted using OFDM. Jung teaches, in a multi-carrier system, that OFDM has low frequency diversity capacity compared to multi-carrier CDMA (MC-CDMA) (col. 2, lines 42-47). Jung also teaches code spreading in the time domain by multiplying a data symbol by a subscriber-specific signature code sequence (col. 4, lines 31-45) where the transmitted data sequence, $d^{(k)}(t)$, is a time domain signal composed of data

symbols, $d_n^{(k)}$, multiplied by chips, $c^{(k)}$, in the time domain. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to have the forward link frequency bins and the at least one reverse link frequency bin comprise signals obtained by code spreading in the time domain in order to increase the frequency diversity capacity of the multi-carrier system compared to an OFDM system.

7. Regarding claim 11, van Nee in view of Jung discloses selecting a first forward link frequency bin from the plurality of forward link frequency bins for forward link transmission, the first forward link frequency bin having an associated first reverse link frequency bin (van Nee: col. 1, lines 17-27; col. 1, line 38-col. 2, line 21; and col. 8, lines 20-67); and selecting a second reverse link frequency bin for reverse link transmission corresponding to the forward link transmission wherein the second reverse link frequency bin is different from the first reverse link frequency bin (van Nee: col. 1, lines 17-27; col. 1, line 38-col. 2, line 21; and col. 8, lines 20-67).

8. Regarding claim 12, van Nee in view of Jung discloses that the selecting a second reverse link frequency bin is based on loading of the system (van Nee: col. 7, line 40-col. 8, line 67, esp. col. 7, line 40-col. 8, line 1).

9. Regarding claim 13, van Nee in view of Jung does not expressly disclose selecting a third reverse link frequency bin for reverse link transmission corresponding to the forward link transmission, wherein the third reverse link frequency bin is different from the first and second reverse link frequency bins; however, van Nee in view of Jung does disclose selecting reverse link frequency bins for reverse link transmission corresponding to the forward link transmission, wherein the reverse link frequency bins are different from each other, depending on the reverse link data rate (van Nee: col. 1, lines 17-27; col. 1, line 38-col. 2, line 21; and col. 8, lines 20-67).

It is generally considered to be within the ordinary skill in the art to adjust, vary, select, or optimize the numerical parameters or values of any system absent a showing of criticality in a particular recited value. The burden of showing criticality is on applicant. In re Mason, 87 F.2d 370, 32 USPQ 242 (CCPA 1937); Marconi Wireless Telegraph Co. v. U.S., 320 U.S. 1, 57 USPQ 471 (1943); In re Schneider, 148 F.2d 108, 65 USPQ 129 (CCPA 1945); In re Aller, 220 F.2d 454, 105 USPQ 233 (CCPA 1055); In re Saether, 492 F.2d 849, 181 USPQ 36 (CCPA 1974); In re Antonie, 559 F.2d 618, 195 USPQ 6 (CCPA 1977); In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). Since van Nee in view of Jung discloses selecting reverse link frequency bins corresponding to the forward link transmission, it would have been obvious to one of ordinary skill in the art at the time of the invention to select any number of reverse link frequency bins, including three, absent a showing of criticality by Applicant.

10. Regarding claim 14, van Nee in view of Jung does not expressly disclose that said plurality of forward link frequency bins comprise three frequency bins; however, van Nee in view of Jung does disclose that the forward link frequency bins comprise a number of bins (van Nee: col. 1, lines 17-27; col. 1, line 38-col. 2, line 21; and col. 8, lines 20-67). It is generally considered to be within the ordinary skill in the art to adjust, vary, select, or optimize the numerical parameters or values of any system absent a showing of criticality in a particular recited value. The burden of showing criticality is on applicant. In re Mason, 87 F.2d 370, 32 USPQ 242 (CCPA 1937); Marconi Wireless Telegraph Co. v. U.S., 320 U.S. 1, 57 USPQ 471 (1943); In re Schneider, 148 F.2d 108, 65 USPQ 129 (CCPA 1945); In re Aller, 220 F.2d 454, 105 USPQ 233 (CCPA 1055); In re Saether, 492 F.2d 849, 181 USPQ 36 (CCPA 1974); In re Antonie, 559 F.2d 618, 195 USPQ 6 (CCPA 1977); In re Boesch, 617 F.2d 272, 205 USPQ 215

(CCPA 1980). Since van Nee in view of Jung discloses that the forward link comprises a number of forward link frequency bins, it would have been obvious to one of ordinary skill in the art at the time of the invention to select any number of forward link frequency bins, including three, absent a showing of criticality by Applicant.

11. Regarding claim 15, van Nee in view of Jung does not disclose in the main embodiment that the plurality of bins are adjacent frequency bins; however, van Nee in view of Jung does disclose in one embodiment that the plurality of bins are adjacent frequency bins (van Nee: Fig. 3; col. 6, lines 4-9; and col. 6, lines 47-59). Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to have said plurality of forward link frequency bins be adjacent frequency bins since this is disclosed in an embodiment in the system.

12. Regarding claim 16, van Nee in view of Jung discloses that said multi-carrier forward link is adapted for transmission of a plurality of code channels (Jung: col. 2, lines 42-47). Van Nee in view of Jung suggests that one of said plurality of code channels is used to communicate power control information for said second reverse link frequency bin (van Nee: col. 7, line 62-col. 8, line 19; col. 9, lines 9-16; and col. 9, line 52-60) where van Nee discloses that one of the plurality of frequency channels is used to communicate control information for reverse link frequency bins and where power control is well known control information.

13. Regarding claim 17, van Nee discloses a method of allocating bandwidth for forward and reverse link transmissions in a wireless communication system (col. 1, lines 17-27; col. 1, line 38-col. 2, line 21; and col. 8, lines 20-67), comprising: receiving communications on a multi-carrier forward link, the multi-carrier forward link having a plurality of forward link frequency bins, the reverse link having at least one frequency bin, wherein the forward link bins

and the at least one reverse link frequency bin are configured such that the allocation of bandwidth for the forward and reverse link transmissions are variable (col. 1, lines 17-27; col. 1, line 38-col. 2, line 21; and col. 8, lines 20-67).

Van Nee does not expressly disclose that the forward link frequency bins and the at least one reverse link frequency bin comprise signals obtained by code spreading in the time domain. Rather van Nee discloses that the signals are transmitted using OFDM. Jung teaches, in a multi-carrier system, that OFDM has low frequency diversity capacity compared to multi-carrier CDMA (MC-CDMA) (col. 2, lines 42-47). Jung also teaches code spreading in the time domain by multiplying a data symbol by a subscriber-specific signature code sequence (col. 4, lines 31-45) where the transmitted data sequence, $d^{(k)}(t)$, is a time domain signal composed of data symbols, $d_n^{(k)}$, multiplied by chips, $c^{(k)}$, in the time domain. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to have the forward link frequency bins and the at least one reverse link frequency bin comprise signals obtained by code spreading in the time domain in order to increase the frequency diversity capacity of the multi-carrier system compared to an OFDM system.

14. Regarding claim 18, van Nee in view of Jung discloses receiving by a first device a communication on a forward link frequency bin, the forward link frequency bin having an associated first reverse link frequency bin (van Nee: col. 1, lines 17-27; col. 1, line 38-col. 2, line 21; and col. 8, lines 20-67); and transmitting by a second device via a second reverse link frequency bin, wherein said second reverse link frequency bin is different from the first reverse link frequency bin (van Nee: col. 1, lines 17-27; col. 1, line 38-col. 2, line 21; and col. 8, lines 20-67).

15. Regarding claim 19, van Nee in view of Jung inherently discloses receiving by the first device an indication of a reverse link frequency bin (van Nee: col. 1, lines 17-27; col. 1, line 38-col. 2, line 21; and col. 8, lines 20-67) where a base station and a mobile station must agree on a reverse link frequency bin in order to establish communication over a reverse link frequency bin.

16. Regarding claim 20, van Nee discloses an apparatus in a wireless communication system, comprising: a first means for transmitting information on a multi-carrier forward link (col. 1, lines 17-27; col. 1, line 38-col. 2, line 21; and col. 8, lines 20-67), wherein said multi-carrier forward link comprises a plurality of forward link frequency bins (col. 1, lines 17-27; col. 1, line 38-col. 2, line 21; and col. 8, lines 20-67); and a second means for designating a reverse link frequency bin (col. 1, lines 17-27; col. 1, line 38-col. 2, line 21; and col. 8, lines 20-67), wherein said first and second means configure the frequency bins so as to enable differential allocation of bandwidth for forward link and reverse link transmissions (col. 1, lines 17-27; col. 1, line 38-col. 2, line 21; and col. 8, lines 20-67).

Van Nee does not expressly disclose that the forward link frequency bins and the at least one reverse link frequency bin comprise signals obtained by code spreading in the time domain. Rather van Nee discloses that the signals are transmitted using OFDM. Jung teaches, in a multi-carrier system, that OFDM has low frequency diversity capacity compared to multi-carrier CDMA (MC-CDMA) (col. 2, lines 42-47). Jung also teaches code spreading in the time domain by multiplying a data symbol by a subscriber-specific signature code sequence (col. 4, lines 31-45) where the transmitted data sequence, $d^{(k)}(t)$, is a time domain signal composed of data symbols, $d_n^{(k)}$, multiplied by chips, $c^{(k)}$, in the time domain. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to have the forward link frequency

bins and the at least one reverse link frequency bin comprise signals obtained by code spreading in the time domain in order to increase the frequency diversity capacity of the multi-carrier system compared to an OFDM system.

17. Regarding claim 21, van Nee in view of Jung discloses means for selecting a first forward link frequency bin from the plurality of forward link frequency bins for the forward link transmission, the first forward link frequency bin having an associated first reverse link frequency bins (van Nee: col. 1, lines 17-27; col. 1, line 38-col. 2, line 21; and col. 8, lines 20-67); and means for selecting a second reverse link frequency bin for the reverse link transmission corresponding to the forward link transmission, wherein the second reverse link frequency bin is different from the first reverse link frequency bin (van Nee: col. 1, lines 17-27; col. 1, line 38-col. 2, line 21; and col. 8, lines 20-67).

18. Regarding claim 22, van Nee in view of Jung discloses that the designations of the forward and reverse link includes allocating more bandwidth for the forward link than the reverse link (van Nee: col. 1, lines 17-27; col. 1, line 38-col. 2, line 21; and col. 8, lines 20-67).

19. Claims 23-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over van Nee (USPN 6,175,550) in view of Jung et al. (USPN 6,307,851) as applied to claim 10 above, and further in view of Applicant's Admitted Prior Art.

20. Regarding claim 23, van Nee in view of Jung does not expressly disclose that the designation of the forward link includes configuring the forward link as a cdma2000 3X forward link. Applicant teaches as prior art that cdma2000 3X forward links are well-known in the art since cdma2000 expands "the capabilities of the preceding technologies to include wireless e-mail, Web browsing, and corporate and local network access, as well as videoconferencing, e-

commerce and multimedia" (page 4, lines 1-page 6, line 8). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to configure the forward link as a cdma2000 3X forward link in order to allow the wireless system to expand the capabilities of the preceding technologies.

21. Regarding claim 24, van Nee in view of Jung in further view of Applicant's admitted prior art discloses that the forward link includes first, second, and third carriers (Applicant: page 4, lines 1-page 6, line 8).

22. Regarding claim 25, van Nee in view of Jung in further view of Applicant's admitted prior art discloses that said first, second, and third carriers occupy first, second, and third adjacent frequency bins, respectively (van Nee: col. 1, lines 17-27 and Applicant: page 4, lines 1-page 6, line 8).

23. Regarding claim 26, van Nee in view of Jung in further view of Applicant's admitted prior art suggests that the designation of the reverse link includes configuring the reverse link as a cdma2000 1X reverse link (van Nee: col. 1, lines 17-27; col. 1, line 38-col. 2, line 21; and col. 8, lines 20-67 and Applicant: page 4, lines 1-page 6, line 8). Van Nee discloses that the reverse link may be configured in a different manner than the forward link in order to support asymmetric data rates (van Nee: col. 1, lines 17-27; col. 1, line 38-col. 2, line 21; and col. 8, lines 20-67). Applicant teaches as prior art that the 1X reverse link has a lower data rate compared to a 3X forward link (Applicant: page 4, lines 1-page 6, line 8). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have the designation of the reverse link include configuring the reverse link as a cdma2000 1X reverse link in order to have asymmetric data rates.

24. Regarding claim 27, van Nee in view of Jung in further view of Applicant's admitted prior art discloses that the reverse link includes a fourth carrier (van Nee: col. 1, lines 17-27; col. 1, line 38-col. 2, line 21; and col. 8, lines 20-67).

25. Regarding claim 28, van Nee in view of Jung in further view of Applicant's admitted prior art does not expressly disclose that the fourth carrier is located in a frequency range similar to the second frequency bin (van Nee: col. 1, lines 17-27; col. 1, line 38-col. 2, line 21; and col. 8, lines 20-67 and Applicant: page 4, lines 1-page 6, line 8); however, Van Nee discloses that the reverse link may be configured in a different manner than the forward link in order to support asymmetric data rates (van Nee: col. 1, lines 17-27; col. 1, line 38-col. 2, line 21; and col. 8, lines 20-67). Applicant teaches as prior art having the reverse and forward frequency ranges overlap (Applicant: page 4, lines 1-page 6, line 8). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to locate the fourth carrier in a frequency range similar to the second frequency bin.

26. Regarding claim 29, incorporating the rejection of claim 10, van Nee in view of Jung discloses each limitation of claim 29, as outlined in the rejection of claim 10, except that a subset of the reverse link frequency bins are time-division-duplexed. Applicant admits as prior art that time division duplexing is well known in the art since it allows both the forward link and the reverse link to be transmitted in a single band (page 5, lines 12-18). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have a subset of the reverse link frequency bins be time-division-duplexed in order to allow both the forward link and the reverse link to be transmitted in a single band.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel J. Ryman whose telephone number is (571)272-3152. The examiner can normally be reached on Mon.-Fri. 7:00-4:30 with every other Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Huy Vu can be reached on (571)272-3155. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Daniel J. Ryman
Examiner
Art Unit 2665

DJR2

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